

CLAIMS

1. A receiving device for receiving a transmission unit signal that is sent from a sending end and accommodates a result of dividing, the result of dividing being obtained by quantizing a value based on relative differences between a plurality of sampling values having temporal prior-posterior relationship therebetween, and dividing data produced in a time series in accordance with a result of the quantizing, at the sending end,

the receiving device comprising:

a need-of-adjustment determining means which determines whether or not an amplitude adjustment needs to be made in accordance with a value of an amplitude of a signal waveform indicated by a decoding result of the produced data accommodated in the transmission unit signal; and

an amplitude adjusting means which transparently passes the signal waveform when the need-of-adjustment determining means determines that the amplitude adjustment does not need to be made, and performs predetermined amplitude adjusting processing to pass the signal waveform when the need-of-adjustment determining means determines that the amplitude adjustment needs to be made.

2. The receiving device according to claim 1, wherein the need-of-adjustment determining means includes:

an amplitude sum total calculating section that calculates a sum total of the results of the quantizing each indicating than the amplitude of the signal waveform; and

a first determination executing section that compares the sum total calculated by the amplitude sum total calculating section with a previously set first

threshold value and determines on the basis of a comparison result whether or not the amplitude adjustment needs to be made.

3. The receiving device according to claim 1, wherein the need-of-adjustment determining means includes:

- an amplitude sum total calculating section that calculates a sum total of the results of the quantizing each indicating the amplitude of the signal waveform;

- a positive number amplitude sum total calculating section that calculates a sum total of the results of the quantizing each having a positive value out of the results of the quantizing each indicating the amplitude of the signal waveform;

- a negative number amplitude sum total calculating section that calculates a sum total of the results of the quantizing each having a negative value out of the results of the quantizing each indicating the amplitude of the signal waveform; and

- a second determination executing section that compares the sum total calculated by the amplitude sum total calculating section with a previously set first threshold value, compares the sum total calculated by the positive-number sum total calculating section with a previously set second threshold value, compares the sum total calculated by the negative number sum total calculating section with a previously set third threshold value, and determines on the basis of the three results of the comparing whether or not amplitude adjustment needs to be made.

4. The receiving device according to claim 1, wherein the need-of-adjustment determining means includes:

- a positive-number calculating section that

calculates number of the results of the quantizing each having a positive value out of the results of the quantizing each indicating the amplitude of the signal waveform;

a negative number calculating section that calculates number of the results of the quantizing each having a negative value out of the results of the quantizing each indicating the amplitude of the signal waveform; and

a third determination executing section that obtains a difference between the number calculated by the positive-number calculating section and the number calculated by the negative-number calculating section and compares the difference with a previously set fourth threshold value, thereby determining on the basis of a result of the comparing whether or not amplitude adjustment needs to be made.

5. The receiving device according to claim 1, wherein the need-of-adjustment determining means includes:

an envelope calculating section that calculates an envelope of the signal waveform on the basis of the results of the quantizing each indicating the amplitude of the signal waveform; and

a fourth determination executing section that compares the envelope calculated by the envelope calculating section with a reference envelope calculated beforehand, thereby determining whether or not the amplitude adjustment needs to be made.

6. The receiving device according to claim 1, wherein the amplitude adjusting means includes one of:

a first amplitude adjustment executing section that makes an amplitude adjustment by shifting a waveform axis

of the signal waveform;

a second amplitude adjustment executing section that makes an amplitude adjustment by making an absolute value of the amplitude of the signal waveform smaller than a predetermined reference amplitude; and

a third amplitude adjustment executing section that makes an amplitude adjustment by attenuating the amplitude of the signal waveform at a given rate of attenuation.

7. The receiving device according to claim 1, wherein when the transmission unit signal received in a time series is lost in a case of executing the amplitude adjusting processing in a unit of the produced data accommodated in one transmission unit signal, a time period just after the produced data corresponding to the lost transmission unit signal is an object to be subjected to processing of the amplitude adjusting.

8. The receiving device according to claim 5, wherein when the transmission unit signal received in a time series is lost, the reference envelope is calculated from the signal waveform relating to the produced data immediately preceding produced data corresponding to the lost transmission unit signal.

9. A receiving method for receiving a transmission unit signal that is sent from a sending end and accommodates a result of dividing, the result of the dividing being obtained by quantizing a value based on relative differences between a plurality of sampling values having temporal prior-posterior relationship therebetween, and dividing data produced in a time series in accordance with a result of the quantizing, at the sending end,

the receiving method comprising the steps of:

determining whether or not an amplitude adjustment needs to be made in accordance with a value of an amplitude of a signal waveform indicated by a decoding result of the produced data accommodated in the transmission unit signal, by a need-of-adjustment determining means; and

transparently passing the signal waveform when the need-of-adjustment determining means determines that the amplitude adjustment does not need to be made, and performing predetermined amplitude adjusting processing to pass the signal waveform when the need-of-adjustment determining means determines that the amplitude adjustment needs to be made, by an amplitude adjusting means.